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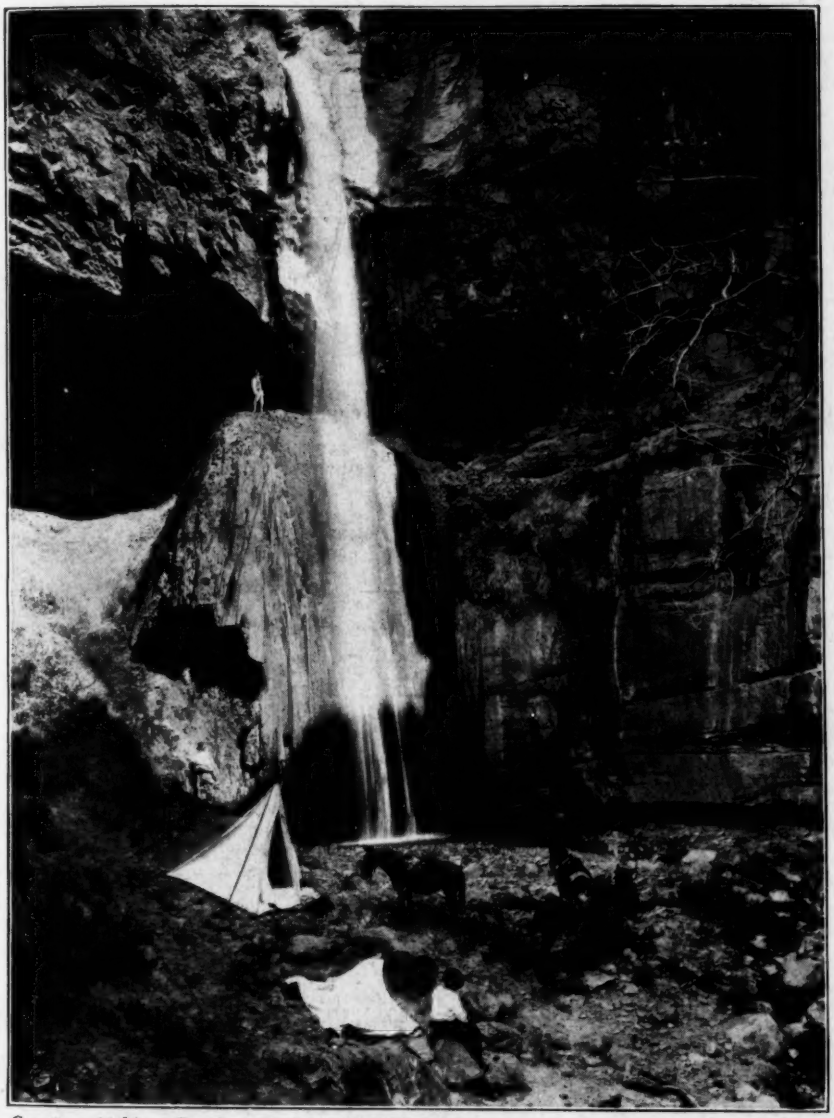

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The Altar at Altar Falls, Bright Angel Creek, Grand Canyon National Park

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VOLUME XXV JANUARY, 1926 NUMBER 1

SUGGESTIONS ON A COURSE OF STUDY FOR THIRD OR FOURTH GRADE GEOGRAPHY

BY ALISON E. AITCHISON AND MARGUERITE UTTLEY
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Whether geography is presented in the elementary school as a separate study or as a part of the social studies group, it has its own distinctive contribution to make. Its subject matter permits the child to see man's active life thruout the whole world and to realize how life is adjusted to various natural environments. A complete understanding of the life of any social group, whether it be local, state, national, or international, requires an appreciation of the part that natural environment is playing in the development of that social group. Such elements of the natural environment as surface and water resources, climate, minerals, plant and animal life, and soil are separately analyzed and classified each by its own specialist; but it is the function of the geographer to view the complexes of elements, known as natural environments, and to classify them on the basis of man's utilization.

Geography can make its contribution only if its underlying principles are recognized and considered when material is being chosen for the elementary school curriculum. It is true that material for instruction must be chosen to fit the capacities of the pupil as he advances from grade to grade, but if this material is chosen simply from the interest standpoint and is a "mere unsystematic, miscellaneous, conglomeration of supposedly interesting items" the child will never gain the ability to think geographically. Unless the material is chosen to exemplify definite geographic principles, thoroly understood by the teachers, these principles will never crystallize in the child's mind.

In many elementary school curricula the starting point for the systematic study of geography has been the home region. There are objections to this procedure. (1) The child is satiated with his home community. In the first three years of school life he

has been gathering experiences there. He has studied its occupations, its transportation, its plants, its birds, its weather. He has acquired the vocabulary of his food, clothing, and shelter. No geographic interpretation of the region has been attempted. He is so accustomed to things as they are, that they fail to arouse his curiosity or to stimulate inquiry. (2) Over most of the United States, man's reactions to his natural environment are so hidden under the cover of our complex commercial system that it is impossible for the child in his initial study of geography to see his relationships to his own local natural environment.

Studies of isolated peoples who carry on relatively little trade with the outside world serve better to show in a simple, direct, and clear-cut manner man's dependence upon the great out-of-doors for the necessities of life. Home geography can be worked out more effectively after the child sees that all people do not live the way he does.

This paper makes an effort to list some of the major geographic principles which the beginning work in geography should seek to develop and to suggest suitable material which is within the comprehension of the children. These principles are the end-products which should slowly crystallize in the child's mind as he accumulates concrete experiences by vicariously living the active lives of many groups of people in many lands.

These principles are listed here simply for the guidance of the teacher or curriculum builder. They will never be stated to the child in so many words. He, himself, may never formulate them but the closer he arrives at an appreciation of them, the more effective we may consider the geography learning to be.

MAJOR PRINCIPLES UNDERLYING BEGINNING GEOGRAPHY

1. Isolated peoples do not have the choice that we Americans have of many things from far away, but are limited to the resources of their home region—their immediate natural environment.

2. From what nature has provided in their immediate environment, they choose materials for their houses and build a type of house in which they may live comfortably in their climate.

3. For food and clothing they are largely dependent upon native animal and plant life or upon the flocks they herd or the crops they grow.

4. Possibilities of herding animals or growing crops depend upon the climate, surface, soil, and water resources of the local area.

5. If they have plants, animals, minerals, which they do not need and which the outside world wants, they are likely to carry on trade in spite of their isolation.

6. The mode of travel depends upon the native animals of the region, the nature of the surface, and the presence of waterways.

7. The temperature seasons cause differences in man's food, clothing, shelter, and mode of travel.

To develop these principles, examples of isolated peoples should be chosen from many different types of environment. These various exposures will serve a double purpose. They will bring the child in contact with the same principles from a score of different angles. He will be aided also in building up a world framework on the following environment principles.

NATURAL ENVIRONMENTAL PRINCIPLES INVOLVED IN BUILDING A WORLD FRAMEWORK

1. The lowlands which are hot all year round are near the equator.

2. Bordering the continuously hot lowlands are lands of two seasons—long hot summer and short warm winter.

3. About half way between the equator and the poles are lands of four seasons.

4. Poleward from the lands of four seasons are lands of long cold winters and short cool summers.

5. Near the poles there is only one season—cold winter.

6. In mountains it is cooler at any time of the year than in lowlands at the same distance from the equator.

SUBJECT MATTER WHICH WILL FORWARD THE EVOLUTION OF THE ABOVE PRINCIPLES

In each case one group should be chosen for a detailed study, rich in intimate description of that part of man's life which is distinctly a reflection of his natural environment. Other groups might be examined, after the detailed study has been made, in

order to find out whether under similar environmental conditions man's major reactions are the same.

I. Dwellers in hot, wet, forested lowlands—Amazon Indians, Congo Negroes

A. Illustrations of specific reactions made by primitive man to specific environmental factors

1. Shelter
   a. Built of reeds, grasses, leaves, and young saplings because they are abundant in a hot wet climate.
   b. If built near a river which floods, raised on piles.
   c. If built on ground, clay floors so as to avoid white ants which devour wood.
   d. Steep thick roofs in order to shed the heavy rains which fall almost every day.
   e. Fires kept burning within the house all day and all night because fuel is plentiful, it is difficult to start a new fire with damp wood when one lacks matches, and smoke from the fires furnishes some protection against mosquitoes.
2. Clothing
   a. Scanty in order to be comfortable in temperatures of 80° to 90° every day.
   b. Materials—bark, grasses, leaves, feathers, and rattling seeds, from the forest.
3. Travel
   a. Land travel limited to short trips, because of difficulty of clearing trails thru the forest.
   b. Rivers which are numerous in rainy lowlands, the chief highways.
4. Food
   a. Little animal food because of
      1. Scarcity of game. Animal life abundant but few animals suitable for food. If man depended for food upon hunting alone, he would have plenty to eat one day and probably starve for a week.

2. Difficulty of hunters' progress thru the forest due to tangle of trees, vines, and creepers, presence of white ant hills, mud, and small streams.
3. Floods, which prevent fishing all year round.

b. Some dependence upon fruits and nuts.

c. Much dependence upon gardens in small clearings in the forest. Planting and harvesting of manioc, bananas, yams go on side by side every month of the year, because it is continuously hot and wet. The soil never has a rest, so it wears out in a few years and man has to move on and make a new clearing.

B. Relation of the unit studied in detail to the building up of a world framework

1. Location on the globe of the hot wet lowland studied
2. Location with regard to the equator
3. Location on a globe or hemisphere map which shows highlands and lowlands
4. Search on the globe for other equatorial lowlands
5. Marking the equatorial lowlands on a hemisphere map which the children construct for themselves

II. Shepherds and gardeners in hot deserts—Arabs of Mesopotamia, Arabia, the Sahara

Two distinct types of life exist in hot deserts, each dependent to some degree upon the other.

A. Nomadic herders dependent upon the scanty herbage and widely separated water supplies for the maintenance of their camels, goats, and sheep. Frequent moving is necessary. Therefore, tents are the most convenient homes. Much dependence upon animal foods, other foods such as dates and grains must be bought from oasis dwellers.

B. Oasis dwellers, who have permanent homes where water supply exists. By means of irrigation they can grow dates, other fruits, vegetables, and a little grain. Scarcity of wood in the desert leads them to choose stone or sun-baked clay for their building materials. They supply dates and water to the nomads, who provide them with wool, hides, meat, and camel's hair for manufacturing.

III. Mountain herders

A. Sheep and llama shepherds of the Peruvian Andes. An illustration of high mountain life in low latitudes, therefore little change in herding methods thruout the year. Semi-aridity, cool temperatures, thin soils, steep slopes make herding the most profitable occupation except where minerals are available.

B. Cattle herders and cheese makers of the Swiss Alps. An illustration of seasonal migrations into the highland pastures. Difficulties of transportation such that cheese making is the best phase of the dairy industry to be carried on in the summer.

IV. Farmers on fertile plains in lands of four seasons

Illustrations—pioneer grain farmers on the Prairies of the United states, pioneer grain farmers in the Prairie Provinces of Canada. Distinct seasonal changes cause rhythm in farm work and necessitate storing of supplies for the cold winter season.

V. Fishermen along indented rock-bound coasts

Norwegian fishermen, cod fishers of Newfoundland

Along indented rock-bound coasts which are washed by cool waters abounding in fish, and backed by land which presents climatic and soil conditions adverse to farming, man turns to the sea to make a living.

VI. Hunters and fishers of Arctic Coastal Lowlands

Eskimos of Alaska, Eskimos of Canada

On plains where the summer is too short and too cool to permit the growing of crops, man must depend upon animals for the necessities of life. He lives near the coast in order to obtain food, clothing, and fuel from the sea as well as from the land.

Together with the development of geographic principles and the building up of a world framework, the following skills should be attained thru the use of the globe and hemisphere maps as tools.

SKILLS

1. Reading directions on globe and hemisphere maps
   a. North, by following a meridian toward the north pole
   b. South, by following a meridian toward the south pole
   c. East, by following a parallel toward the right
   d. West, by following a parallel toward the left

2. Approximating distances on the globe by the use of some such simple scale as the following:

On 18 inch globe the distance from New York to San Francisco is approximately 6 inches. The distance on the earth from New York to San Francisco is 3000 miles. One inch therefore represents 500 miles.

3. Recognizing on the globe each continent and ocean

4. Recognizing immediately whether a place indicated on the globe or hemisphere map is north or south of the equator

The following materials will furnish subject matter for the beginning work in geography:

PICTURES

1. National Geographic Society Pictorial Geography. (National Geographic Society, Washington, D.C.)

Set No. 1. Eskimo life and Sahara Life

Set No. 2. Negro in Africa

2. Sahara pictures. *National Geographic Magazine*, January, 1914; October, 1922

3. Peruvian Andes. *Ibid.*, April, 1913

4. Switzerland. *Ibid.*, March, 1910; March, 1922

5. Newfoundland. *Ibid.*, July, 1921

6. Norway. *Ibid.*, June, 1924

7. Congo. *Ibid.*, October, 1922

BOOKS

1. Allen: How and Where We Live. 1924. Ginn and Co.

2. Barrows and Parker: Journeys in Distant Lands. 1924. Silver Burdette and Co.

3. Carpenter: Around the World with the Children. 1917. American Book Co.

4. Fairgrieve and Young: Homes Far Away. 1923. Appleton and Co.

5. Mirick and Holmes: Home Life Around the World. 1918. Houghton, Mifflin and Co.

6. Purdue: Child Life in Other Lands. 1918. Rand McNally Co.

7. Aitchison and Uttley: Across Seven Seas to Seven Continents. 1925. Bobbs- Merrill Co.

GEOGRAPHIC INFLUENCES IN THE DEVELOPMENT OF PORTO RICO

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FOUR HUNDRED YEARS OF SPANISH INFLUENCE

As one enters the harbor of San Juan he is at once impressed by the fact that this is the entrance to a city and to an island which was long under the influence of Spain. El Morro, firmly built on rock cliffs, for centuries lifted its ramparts against English, Dutch, French, and American invaders. A part of what is now the Governor's Palace was the earliest fortification, La Fortaleza, first built in the early sixteenth century. Another building viewed from ship-board is Casa Blanca, built and used by the family of Ponce de Léon. Skirting parts of the harbor's edge are the ruins of the old sea wall which has long since done its duty as a protector of Spanish subjects and of Spanish treasure. Even yet the old city gate, looking out over the harbor entrance, is closed at sunset. The other gates leading to the city have crumbled away under the attacks of time and modern city construction. San Juan, a century older than Plymouth or Jamestown, is still invested with a Spanish atmosphere.

In the country one is continually impressed by the odd mixture of Spanish and American, of primitive and of modern. On the main highways one commonly sees a Negro woman carrying a huge bundle of laundry on her head; or a street vender as straight as a ramrod balancing on his head a large flat basket of vegetables, fruit, or live chickens; or perhaps a ragged, bare-footed Negro boy leading a razor-back hog; or a pony train loaded with produce for the city market. Another common sight is the two-wheeled ox cart as it is laboriously pulled along by the slow-moving oxen. At the same time one may be deafened by a shriek from a huge motor truck as it rumbles past; while thru the crowded and narrow city streets or over the fine mountain roads passes a never ending procession of touring cars, motor passenger buses, and speeding jitneys.

THE PEOPLE

It is safe to say that there is not a native Indian left on the island, tho occasionally in the mountainous parts traces of Indian blood are seen in a straight nose, or a high cheek bone, or a long

braid of straight black hair. One cannot speak of natives of Porto Rico as he does of the natives of the Hawaiian Islands or of the Philippine Islands. The Porto Ricans are descended mainly from the Spanish, and keep their Spanish traits of character in the same way as do the Spanish Americans of South America. Spanish is the common language and probably will be for the indefinite future. Perhaps as time goes on all the educated and cultured people will speak English also, but there is no attempt to suppress the Spanish language.

Mixed with this blood of old Spain is that of the Negro. The African strain is much more noticeable in the people of the coastal

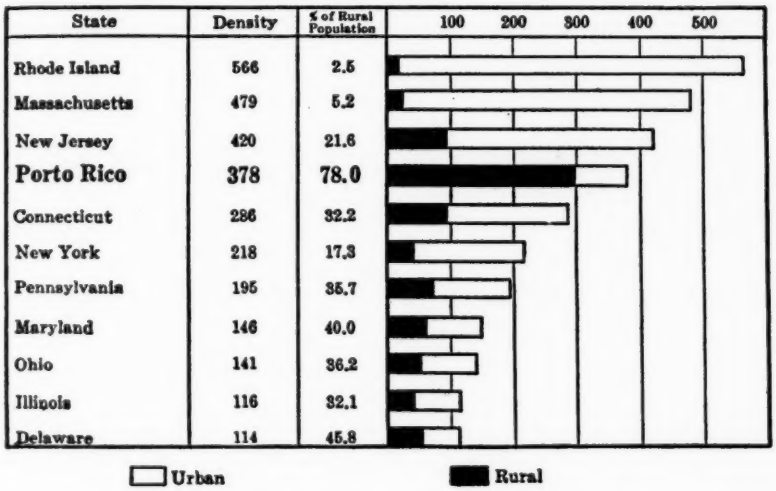

FIG. 1. Comparison of population densities—1920

regions than in those of the mountainous interior, because it was on these fertile plains that the greater demand for slave labor existed. In the last census less than 30 per cent of the people of Porto Rico were classed as Negro and mulatto. These two groups showed a marked decrease from the census of 1910. This is less than the proportion found in most of our southern states. It is less than in any other of the West Indies except Cuba. Altho people with any visible signs of colored blood do not mix in social functions with the whites, there is not so strong a feeling of race distinction as in the United States and no "race problem."

Porto Rico is seven-tenths the size of Connecticut or four times as large as Long Island. On this area of 3,435 square miles over a

million and a quarter people live. With a population density of 378 per square mile the island is outranked only by the states of Rhode Island, Massachusetts and New Jersey. In all of our densely populated states the majority of people live in cities; in Porto Rico, however, 78 per cent live in rural districts (Fig. 1). There are only six towns and cities on the island which number over 10,000 population. The three largest cities are San Juan (71,500), Ponce (42,000), and Mayagüez (19,000). The majority of the people, therefore, derive their living directly from the soil.

Not all the area, however, lends itself to cultivation. The fact that 90 per cent of the area is classified as farm land is misleading, for a large part of that is pasture and brush land; a little over one-fourth of the area is actually cultivated.

INFLUENCE OF TOPOGRAPHY

The island, which is a part of the great Caribbean mountain chain which includes the lesser and greater Antilles, probably owes its rectangular shape and its very steep submarine profile to faulting. It is made up largely of sedimentary rocks derived from volcanic materials and igneous intrusives. These complex rocks make up the central part of the island consisting of mountains and dissected plateaus. The Cordillera Central, an east-west range of mountains whose peaks range from 3,500 to 4,400 feet elevation form the central core of the island. This range is separated from the more isolated Luquillo mountains to the east by two fertile interior valleys. Bordering the mountains are wide areas of rugged foot hills and deeply dissected plateaus ranging from 1,000 to 2,000 feet above sea level. Still another area, bordering part of the coast, is the limestone upland, portions of which are honey-combed with sink holes, underground caverns, and other evidences of the active work of solution.

In geologically recent times slight submergence has caused the formation of alluvial plains at the mouths and along the courses of the rivers, and in some cases(as in the region east and west from San Juan) the alluvial plains of the various rivers coalesce. In the interior valleys of Cayey and Caguas rich alluvial material has also been deposited by the two largest rivers of the island—the Río Guaynabo and the Río Grande de Loíza.

Thus well over half of the island is not well suited for agriculture. Nevertheless, due to the fertility and the tenacity of the

soil, many of the steep slopes are cultivated, especially for coffee in the western part of the island and for tobacco in the eastern part. Portions are used for grazing, and much is waste land not even bearing trees. Only the Luquillo Range has a virgin forest clothing its slopes. This 35,000-acre federal forest reserve, together with about 5,000 acres of insular reserve in the Cordillera Central form practically the only forest areas in Porto Rico. The rugged country with its tiny villages huddled in the valleys, with its many thatched huts squatting on every hill-top, and with its coffee plantations and tobacco fields here and there has a population density not far below that of the better favored parts of the island. These kindly people—many of them poverty-stricken, bare-footed, and illiterate—manage to live and raise large families on a diet substantially of rice, beans, and bananas.

The alluvial plains, together with the more level portions of the limestone belt are well adapted to sugar cane and to tropical fruits and coconuts, and in the case of the interior valleys, to tobacco. It is largely on these areas that the railroads are built, and it is here that all the larger towns and cities are located.

INFLUENCE OF CLIMATE

In San Juan on the northern coast the temperature of the warmest month averages about 81° F., and that of the coolest month about 75°, or an average annual range of about 6°. From day to night, however, there is an average difference of 11°. In Aibonito, a town of 2,000 feet elevation located near the center of the island, the average annual range is 11° and the daily range is 24°. Rarely do the trade winds fail, and rarely do they vary from a rate of 9-13 miles per hour. During eighteen months spent in Porto Rico near the northern coast the writer never experienced the extreme and continued heat often characteristic of the summers in the middle west of the United States.

Nor do the benefits of the trades stop with the cooling of the temperature. They bring rain to the larger part of the island. The mountainous divide, extending in an east-west direction, is nearer the southern coast, thus all the northern, eastern, and part of the western slopes receive ample rainfall. The coasts receive an average of 75 inches annually; farther inland among the mountains of 2,000 to 4,000 feet elevation the precipitation increases to 100 inches, while in the Luquillo Range in the eastern part of the

island 150 inches is sometimes reached. This heavy rain, however, falls in the form of short sudden, torrential downpours. The average length of a shower is 15-20 minutes. Due to the impervious character of the soil and to the general lack of forestation, the runoff is very great. It is not unusual for a mountain stream to rise 15-20 feet during a heavy shower. On one occasion at Comerío dam, where electric light and power for about 30 towns is generated, there was recorded 25 minutes after the shower started a rise of 15 feet over the dam; and all day the water continued at a height of 10 feet over the entire 575 feet length of the dam.

Heavy showers are characteristic also of the southern or lee slope which, however, receives from less than 10 to about 50 inches yearly. This amount, however, is not evenly distributed thruout the year. A distinct dry season occurs from December to March or April. This means that large tracts of mountain and hill slopes are worthless except for meagre pasturage. On the southeastern plains irrigation is practiced. About 27,000 acres chiefly devoted to sugar cane are made productive by storing the waters of several rivers in five reservoirs.

SUGAR

Somewhat less than half of the cultivated land of Porto Rico is devoted to the growing of sugar cane, which borders the island in an almost continuous belt (Fig. 2a). The rich soil of the alluvial plains and of the disintegrated limestone region, the abundant rainfall on much of the coastal land, the year-round growing season, the abundant labor, and the easy means of transportation by rail and wagon road along the coast all conduce to make sugar the important crop of Porto Rico. In 1920 about $85,000,000 worth of raw sugar was produced in the fifty-five sugar mills, or *centrals* for shipment to New York and New Orleans where the product is refined. It is the rise and fall in the price of this commodity which largely determines prosperity or hard times among the people of the island.

Cane sugar production has grown tremendously in Porto Rico since the American government came into control. Between 1901-1923 the exports of sugar increased over 400 per cent in quantity and over 900 per cent in value. This has been due to many factors some of which are: (1) increased market in the United

States arising from the change of ownership of the island; (2) encouragement thru argicultural education and thru the entensive experimental work carried on by both the insular and federal governments; (3) better shipping facilities; (4) decline of the coffee industry; (5) better intra-island communication; (6) concentration of manufacture of raw sugar into a few large scientifically managed factories instead of the laborious and expensive manufacture in many small local mills; (7) increase of population giving an abundant labor supply; (8) increased capital. Porto Rico has thus risen to a place among the first five or six cane sugar-producing countries of the world.

OTHER CROPS

Besides sugar the other leading crops in their order of importance are: tobacco, coffee, fruits and nuts. Tobacco, grown chiefly under the cover of cheese cloth, is most intensively cultivated in the wide open interior Caguas and Cayey valleys (Fig. 2b). Not only is the valley floor utilized but also the hillsides. It is not an uncommon sight to find acres of tobacco growing on a 30° or 40° slope. The white cheese cloth covering, used to produce a finer quality leaf, gives a picturesque snow-white appearance to the landscape.

Tobacco is an indigenous plant but its cultivation was discouraged by the Spanish. Its production has had a marked increase in the last twenty-five years until now about 20,000,000 pounds are produced annually. About one-fifth of this is manufactured into cigars and cigarettes on the island while the remainder is shipped to the States in leaf form.

Coffee, once of prime importance and the leading product purchased by Spain has fallen to third place and will probably continue to decrease in importance. The chief coffee producing area of the island is found in the mountainous and hilly west central part (Fig. 2c). Here the low coffee trees are often grown in connection with banana-trees. The forests of shade trees used for protection against the tropical sun and the torrential rains, form a beautiful green covering to the mountains which are not uncommonly treeless, brown, weather-beaten, and rain-washed. The culture of coffee merges into a form of domestic processing consisting of the classification, the cleaning, and the polishing of the berries.

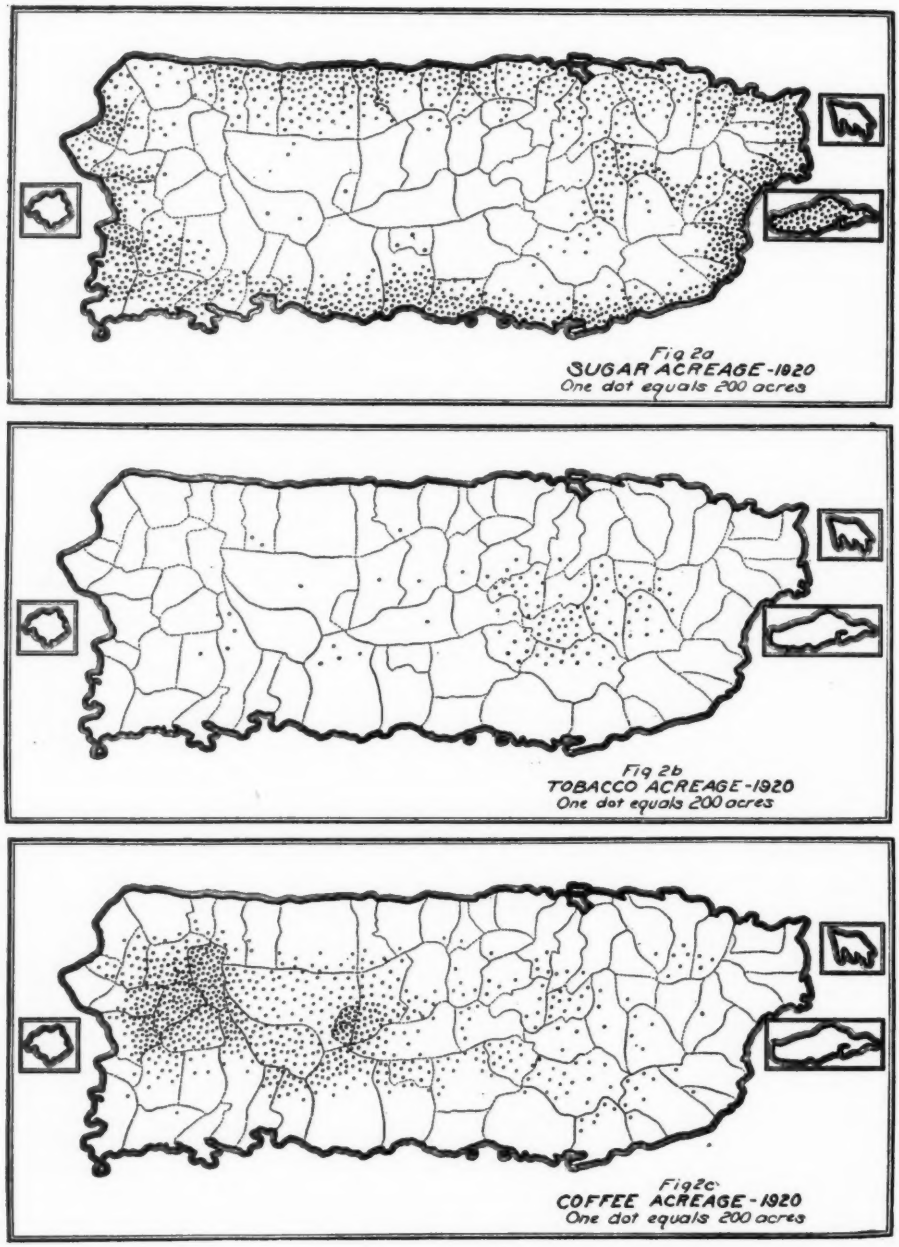

FIG. 2. Acreage of Three Principal Crops of Porto Rico

Porto Rican coffee finds practically no market in the United States because, as the Porto Ricans say, the Americans do not know how to prepare it properly. Perhaps a more reasonable explanation of the absence of an American market is the high price. In the last decade the export price of raw coffee has ranged from 14 cents a pound in 1915 to 27.5 cents in 1920. This means, of course, that the Porto Rican coffee can not compete in price with the cheaper coffee of Brazil.

The fruit industry is one which has a great future. Bananas form half the value of all the fruits grown, but practically none are exported. Unlike the banana grown on the large plantations of Central America, the banana of Porto Rico is grown on a few plants in every door yard. Together with the plantain it forms one of the principal foods of the country people.

Coconuts which are of second importance grow best along the sandy belts near the coast. Whenever the coco palm forms a part of the landscape the stranger may be sure that the ocean is not far away. About a million dollars worth of coconut products are produced annually, half of which are exported to the United States.

Oranges, grape fruit, and pineapples also have considerable commercial importance. The great increase in the cultivation of these fruits is due to the recent installation of refrigerator ships which sail regularly between Porto Rico and New York. The northern coast near San Juan has been rapidly developed by both American and Porto Rican fruit growers. The rich alluvial and limestone soil, and the easy access to the leading port of the island make this region the natural commercial center of citrus fruit and pineapple production. Alligator pears, mangoes, and canned and preserved native fruits are yet of minor importance in external trade.

As a source of tropical fruits for the United States Porto Rico is rapidly becoming the rival of Florida and California. Since 1901 the value of fruit and nut export has increased from $100,000 to over $5,000,000.

The Porto Ricans of today are learning that the wealth of their island lies not in the gold which was so diligently sought by the Spaniards but in the products of the soil. The gold received for the exportation of sugar *in one year* exceeds all the gold ever extracted from all the river sands and gravels since the day Columbus landed on the shores of fair Borinquén.

COMMERCIAL POSITION

Even in the days of the Spanish Main Porto Rico had an advantageous commercial location. The fortresses of El Morro and of San Cristóbal which protected the Spanish treasure ships in the harbor of San Juan were second only to the great fortress of Cartagena, in Colombia. The ships carrying Mexican and Peruvian gold and siver stopped at Porto Rico on their journey to Spain. For this reason Porto Rican waters were infested with pirates and buccaneers. Unfortunately, however, for three centuries Porto Rico was not allowed to trade with any country other than Spain, nor in any ships other than those of Spain. Moreover,

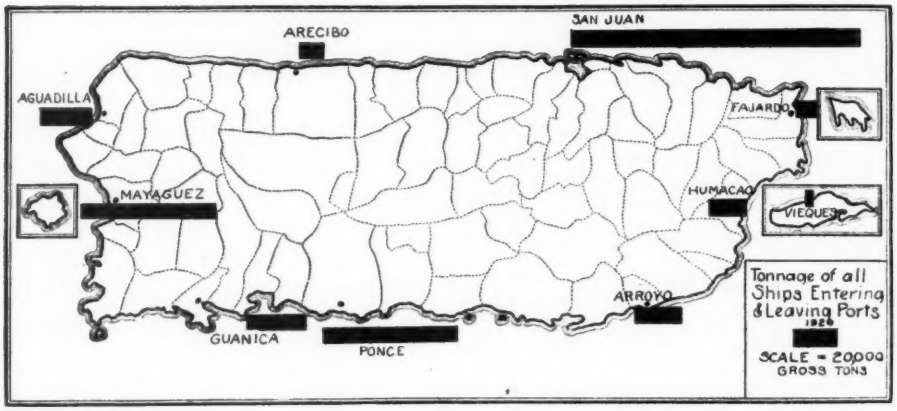

FIG. 3. Tonnage of all Ships Entering and Leaving Ports—1920

the port of San Juan, only, was allowed to carry on this overseas commerce. Thus Porto Rico's location as a link between Europe and Middle America or between North and South America was not fully utilized. Near the beginning of the nineteenth century, however, Spain gave Porto Rico more liberal laws enabling it to carry on foreign trade and to use other ports for external commerce. Since the beginning of the twentieth century the opening of the large and free market in the United States, the increasing investment of capital in Porto Rico, the larger, faster and better equipped ships, the improved internal communications, the free public education and more sanitary conditions have all combined to cause Porto Rico to forge ahead as a commercial island. Its unique position as a stepping stone between North America and South America and between Europe and the Panama Canal is now being

fully utilized because of its excellent harbor and rich hinterland. San Juan is by far the leading port (Fig. 3).

These conditions have led to an ever increasing export trade in agricultural products (Fig. 3). Sugar forms 56 per cent of the total value of exports, and tobacco 20 per cent. The third item in importance, however, has come to the front in the last few years, it consists of hand-made ladies' blouses, underwear, and laces. This domestic industry spread rapidly thruout the island. Many thousands of women and girls sew, embroider, hemstitch, and make lace in their homes. During the fiscale year ending June, 1923, this class of goods made up 8 per cent of the total exports. Fruits and nuts held fourth place among the exports with 6.5 per cent of the total value. Coffee, which forms about 3 per cent, has been

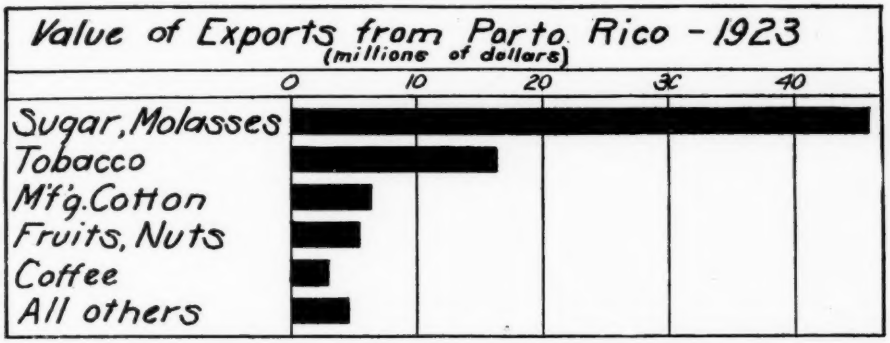

FIG. 4. Value of Exports from Porto Rico—1923

reduced by the growing importance of sugar to the fifth place. About 93 per cent of the exports are sent to the United States; of the 7 per cent going to foreign countries over half is coffee which is exported largely to Cuba and Spain.

In a densely populated, tropical, agricultural country like Porto Rico the imports naturally are manufactures and temperate climate foods such as cotton cloth, meat and dairy products, rice, iron and steel manufactures, leather, wheat, and flour. Porto Rico and the United States thus embody in a small way a fine example of two countries which are commercially interdependent because of natural geographic factors, such as: (1) difference in climate; (2) difference in stage of industrial development; and (3) difference in population density. These factors, together with the favorable location and economic progress of Porto Rico, have brought about since 1901 an increase in the total value of external

trade from 17.5 million dollars to 154 millions, or an increase of 800 per cent in 22 years. Porto Rico's banner year was 1921 with a total overseas trade of 217 million dollars. Fortunately for our island possession the balance of trade in 1923 was $10,000,000 in its favor.

RECENT SOCIAL PROGRESS

The last quarter century has brought unquestionably more material benefits to the island than any other quarter century in its history, tho at the same time it is realized that the social and economic conditions of the common people are still far from what they ought to be. The overcrowded conditions of both city and country mean poverty.

The development of a system of free public education has probably been the greatest single contribution made during these twenty-five years of American influence. Immediately after Porto Rico was taken over by the United States an American system of free public instruction was initiated. American teachers were brought from the States to teach English and special subjects; rural as well as urban schools were built, books were provided free of charge, and later a normal school to train elementary teachers was established. This has now became a university with the schools of liberal arts, law, pharmacy, and education, established

TABLE OF EDUCATIONAL STATISTICS

	1899	1922
Number of children of school age	322,393	438,743
Number of children in school	26,212	206,533
Per cent of children in school	8	45.2
Numbers of teachers	541	4,120
Amount appropriated for education		$2,961,945
Per cent of budget spent on education		38
Number of buildings		1,911
Per cent of illiteracy	79.6	55

in Río Piedras, seven miles outside of the capital, San Juan. The schools of agriculture and mechanic arts are located in Mayagüez on the western coast of the island. Altho still in its infancy the University promises to become an institution of note.

Not only thru the school with its trained teachers, its free lunches, and clinics, have the social and economic conditions been improved. The systematic and scientific cleaning up of many of

the unhealthful conditions has made Porto Rico a safe and pleasant place in which to live. Since American occupation yellow fever and smallpox have disappeared. The bubonic plague, which threatened the inhabitants on two occasions, was immediately curbed with but few fatalities. Malaria is not dangerous. Tuberculosis and hookworm are the most serious diseases on the island. The agricultural people, particularly of the mountainous interior, are the greatest sufferers from the latter.

Twenty-five years has seen the establishment of a municipal water supply, sewage system, and electricity in all the larger towns and most of the smaller ones. Before 1898 San Juan only had sewage disposal, and electric lights were unknown. Now the open sewer is unknown and even many of the small villagers use electricity.

Besides the increase in agricultural output, the development of commerce, the growth in education, the improvement of sanitary conditions, one must not overlook the extensive construction of good roads and bridges. It is for this purpose that a sum second only to that for education is appropriated by the legislature. The Spanish are known for their excellent road building in Porto Rico. As one crosses the island by motor bus he is told that the main road or Carretera Central from San Juan on the north coast to Ponce on the south coast was built for military purposes by the Spanish. Its length of 84 miles is a fine example of engineering skill. Modern road builders could well follow the example of the Spanish in this respect. But altogether, Porto Rico possessed only 175 miles of such roads when it became an American possession in 1898. During the 400 years of their control the Spanish spent three and one-half million dollars in the construction of 275 kilometers of state and provincial roads, while in the twenty-three years (1898-1921) the Porto Rican treasury has spent almost eleven millions in constructing over a thousand kilometers. At the present time one may motor completely around the coast or may cross over the mountains in at least four different parts, and may penetrate into various other parts by roads which do not as yet connect to form thru trunk lines. By this increasing network of fine roads and by means of the narrow-gauge railway which almost encircles the island and also extends into the interior valley of Caguas, the country people have been able to market their produce in the larger towns and ports, and in turn to purchase the imported necessities

and luxuries which were so long denied them. The tourist and the business man can motor between any of the larger towns within a day. But there still remains many a small village, plantation, or thatched hut which connects with the outside world only thru an almost impassable mountain trail. During and after a rain these trails become veritable mountain torrents of red mud and water; under the heat of the tropical sun the sticky mud bakes into ruts and holes and crust-covered bogs which endanger the pack or saddle horse at every step. Yet it is this part of the island, seldom seen by the average tourist, which has a unique and primitive appeal.

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THE RELATION OF AGRICULTURE TO MINING IN THE UPPER PENINSULA OF MICHIGAN

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The Upper Peninsula of Michigan is commonly considered a land of exploitive industry and rightly so. One of its iron ranges, the Marquette, was the first in the Lake Superior district to ship ore, and altho the leadership in iron ore production has passed to Minnesota, the output each year is not inconsiderable. The Copper Country of the Upper Peninsula has long been and continues to be one of the principal sources of the red metal. The forests, also, have contributed their share toward supplying the industrial and agricultural regions to the south and southeast with materials for building and manufacturing. With the cutting of the forests and the winning of the copper and iron has gone a quiet but persistent development of the agricultural resources of the area. It is with the relation of agriculture to mining in the Iron and Copper Country that this paper deals.

THE "MINING TO AGRICULTURE" SEQUENCE

The usual sequence of events in the utilization of the resources of a mining region is more or less familiar. First goes the prospector, digging a pit here, opening a test hole there, changing the landscape but little until he makes a strike. On his heels flock miners, and those who serve and prey on the miner, to dot the land with shafts, piles of refuse, and houses, and to mark it with roads. The coming of the mine creates a local market for food stuffs. A few farmers may come into the area and take up land with the view to satisfying the wants of the mining community; other farmers are recruited directly from the mine employees. In time comes the partial or complete exhaustion of the mineral resources and the miner leaves. With him goes the market on which the farmers have been relying. The farmer, perforce, must reach out to more distant markets or abandon his farm. All mining areas possessing agricultural possibilities tend to pass thru this same sequence. Altho on a smaller scale than in California or Colorado, the same process has been going on in the Iron and Copper Country of the Upper Peninsula.

THE GEOGRAPHIC SETTING

The services of mining in attracting farmers have been of special value in the mineralized part of the Upper Peninsula for its virtues as a farming land have not appealed to the average home seeker. The reasons are not hard to find. The region is on the border of the ice-scoured plains to the north and the moraine plains to the south. Together with the characteristic lakes and swamps there is too much thin soil and bare rock in parts of the Copper Country and of Marquette and Gogebic counties to appeal

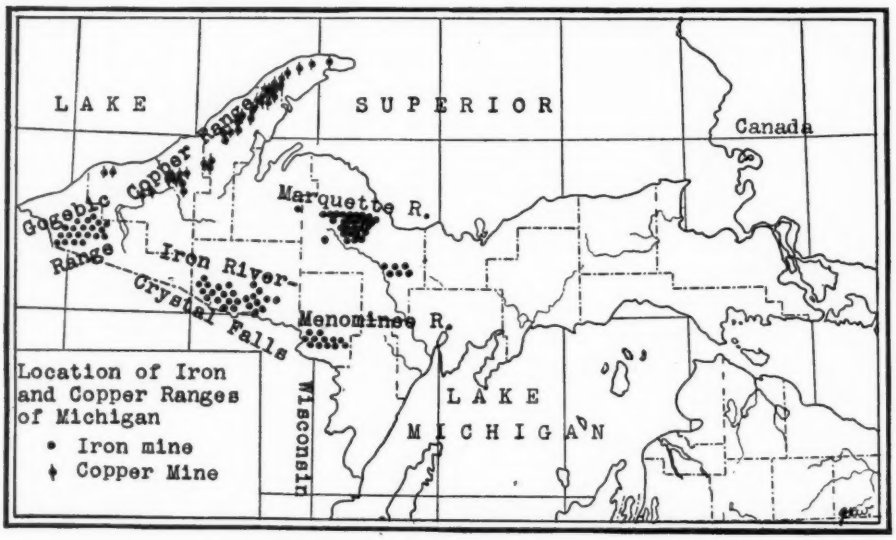

FIG. 1. The mining region of the Upper Peninsula of Michigan

to the prospective settler. In the Iron River Area, the presence of many glacial boulders in part makes up for the lack of ice-scoured rock. Soil conditions are better in the Menominee area. There is much good soil but there is also much poor land, and to the casual traveler the poor soils have appeared to make up a larger part of the total than is actually the case. This erroneous impression results from following the roads laid out in the exploitation of the pine forests, which generally occupied the sandy, less fertile soils; large areas of heavier, richer soils are still covered with characteristic hardwood trees and are off the main highways. Occasional fires in the cut-over pine lands have not improved the prospect for the farmer. An additional handicap to agricultural settlement lies in the climate. This region shares with others

having the "humid continental with short summers" type of climate the handicap of a short growing season. In parts of the area, the growing season is as much as 140 days, but much of the country lying between the Copper range on the west, the Iron River-Crystal Falls range on the south, and the east end of the Marquette range has but 80 days or less.

Once enumerated, these handicaps must not be over-estimated in accounting for the agricultural retardation of the mining region. Just as important, if not more so, has been the fact that there was better land available farther west. So long as good, level, well-drained, boulder-free land could be obtained in the Great Plains, just so long would this part of the Upper Peninsula be passed by. And the settlement of the Iron and Copper Country has been further delayed by the fact that in a large way the best lands of the Upper Peninsula lie outside of the range country. The lacustrine plains of Chippewa and Ontonagan counties, and the fertile rolling moraine plains extending from Marquette to Menominee have competed with the ranges for the land-hungry settler.

EARLY AGRICULTURAL SETTLEMENT

In response to the conditions just set forth, the agricultural settlement was very slow. Indeed, before the taking up of mineral claims, the range country was a veritable wilderness. With the mines opened, it was easier to carve a farm out of the forest. Some of those who came in the wake of the miner to take up farming land secured the money to pay for their farm and to buy equipment by working in the woods in winter, often supplying the mining companies, with mine props, poles, etc. One large mining concern sold timber land to settlers under the following conditions: the land was sold to the prospective farmer with the understanding that he was to cut the company's timber (the timber on all but two and one-half acres out of each forty remained the property of the company) for which cutting he was to be paid at the regular rate. In this way he had an income while clearing the farm. Quite naturally, these men located near the towns where the timber was delivered and where they secured their supplies. The work in the woods made an otherwise idle winter season into a profitably busy one. Not all of these farmers worked in the woods as some chose the mine for their winter work. Of course,

their farms were located near the mining centers in order that they might turn to grubbing out ore from the ground when the season made grubbing out stumps no longer possible. There is evidence that the opportunity for winter work in the mines continues to attract the occasional settler.

THE MINER-FARMER

Mining aided agricultural development not only by furnishing farmers with winter work but also by attracting miners who later turned to farming. Over 80 per cent of the farmers of Houghton

FIG. 2. Clearing cut-over land. Such work brings no immediate return, consequently, the farmer is often glad to work in the mines in winter.

county and over 75 per cent of those in the mining townships of Marquette came into the region as miners. In the transition from miner to farmer we may recognize three stages.

The first stage is entered upon when the miner, who perhaps came directly to the mines from the eastern port where he set foot on this continent for the first time, decides that he will invest the money he has saved in a piece of unimproved land where he may raise his family. The land he buys is seldom more than two or three miles from the mine, for he must be near enough to go back and forth to work. A typical case will illustrate. Near Crystal Falls, a Polish miner bought 80 acres of cut-over land. He had a wife and seven boys, the oldest sixteen and the youngest two years old. He bought two cows and a horse, and with the aid of the boys,

he built a house, a log barn, and cleared some land for potatoes and oats. The mother and the boys cleared the remainder of the land little by little and farmed that which was cleared. The surplus wood and farm produce found a market in the adjacent town. In this way, the land was improved, the children contributed to the family income, and the father remained regularly employed at the mine. On the Marquette and Crystal Falls iron ranges, of the men considered as regularly employed at the mines, some 5 per cent (from 20 per cent in some rural districts to 3 per cent or less

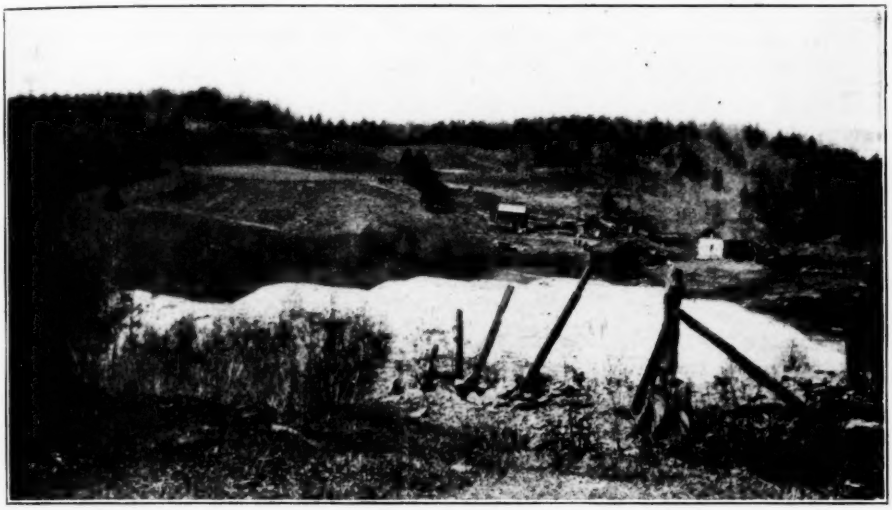

FIG. 3. Looking across the waste heap of a mine to a small struggling farm beyond

in the larger towns) own farms which are operated for the most part by their families and occasional "hired help."

The second stage in the development of a farmer from a miner is marked by a change from regular to seasonal mining. The summers are spent on the farm and the winters in the mine. Some find it convenient to go to the woods in winter, especially if labor at the mines is plentiful. This stage is marked by the lack of enough improved land to make a self-sufficient farm unit, and a lack of equipment and capital for livestock and dairy farming. The embryonic farmer is still dependent, in part at least, on the mine for ready cash to buy farm equipment and bread.

The third stage marks the achievement of an independent farm unit. Having bought his farm and equipped it with money earned in the mine, the farmer is now in a position to be independent of

it. A large percentage of the miner-farmers in this stage have placed their farms on a sound basis thru dairying. The cool, moist summers produce a surprisingly luxuriant growth of grass, there is much relatively cheap land for grazing, and the land that has not been cleared of stumps can be put to this use. Finally, dairying furnishes employment thruout the year.

At what stage in this transition from miner to farmer are the miner-farmers of the Iron and Copper Country? A quantitative statement cannot be made, but it is certain that whereas many are in the first stage, and a few in the third, most of the miner-farmers are in the second—that of seasonal farming and mining (or work in the lumber camps). One operator writes that there is a very small percent locally that does not figure on some time at the mine. In other words, most of the farmers in the mineralized areas of the Upper Peninsula shift from the farm to the mine and forest with the coming of winter.

FROM THE OPERATOR'S VIEWPOINT

At first thought, it would appear that the mine operator had nothing to gain and everything to lose by the shifting of men from the farm to the mine and back again. The haying and harvesting seasons bring with them the request for time in which to do the farm work, and that request comes during the shipping season, the busiest time at the mine. The walk to and from the farm, and the consumption of energy in doing chores before and after working hours tend to sap the miner's energy. Despite these drawbacks, the operators interviewed either stated that it was as much to their advantage as to their disadvantage to have this seasonal labor, or they went so far as to say that they benefited greatly by the arrangement. It guarantees them a relatively stable supply of dependable laborers. The men who are ambitious enough to buy a farm are usually among the most thrifty of the mine employees; and once on the farm they need the income from the mine to pay for and stock their farm and to eke out the relatively small returns from it in the early years when little of the land is improved. As a result, they are among the most dependable of miners. But more important than the high quality of the labor is the fact that it is stable. The miner who owns a home is not likely to float from one mine to another. Further, a temporary shut-down of the mines, instead of driving the miners away, simply

puts them to work on their farms ready to return to the mines when they reopen. There is a community, for example, in Iron county that started out strictly as a mining community but turned to farming when the mines closed. The mines are now working again and these farmers have either returned to the mines or have sent their sons. The number of workmen stabilized by the miner-farmer combination is swelled by the relatives of the farmer who live with him and work in the mines. It is this stability of labor that has brought many operators to the opinion that the miner-farmer arrangement is, if not a positive good, at least no great evil.

FIG. 4. Land only partially cleared of stumps and boulders may be used satisfactorily for pasture. The growth of grass is surprisingly luxuriant.

THE MOTIVES OF THE MINER-FARMER

In view of the fact that mining insures a relatively steady income, one may well ask why the men turn to farming, either temporarily or permanently. Most of the miners like their work. Those who do change to the farm usually have one or more of the following reasons: (1) They do not like mining because it is somewhat dangerous, or because it offers less individual freedom than farming. (2) Farming is the occupation which many of them followed in their mother country. (3) Occasionally a miner finds himself slipping in health and decides he must change his occupation. All find themselves getting old—some wish to continue an active life and the farm enables them to do so. (4) With large

families, and large families among the mining population are not uncommon, they believe they will be financially ahead on the farm.

The Mining Communities as Markets

The opening of mines has not only brought farmers into the area but it has also furnished a market, thus enabling the farmer to sell his produce without paying costly transportation charges and without coming into competition with other agricultural areas. In the Copper Country until 1920 the local market was able to absorb all farm products raised in the area. In Iron County, the home market consumes all of the farm produce. In the mining areas of Marquette County, the markets are sufficient except for the potato. The market is not as large as one might suppose, however, for much of the need for vegetables and dairy products is met by the miner himself. Gardening and the keeping of a family cow are stimulated by the peculiar combination of urban and rural conditions characteristic of the average mining location. Clustered around the scattered mines, the homes are grouped in a sufficiently compact way to give an urban aspect, but each group or "location" is small enough for the most centrally located to be within easy reach of the peripheral garden and grazing areas. The mining companies encourage the use of the land in this way by renting it for a nominal sum. Despite the curtailment of the market thru this growth of gardening and home dairying, one must remember that to date the market has been able to absorb most if not all of the produce of the surrounding region. Further, the gardening is in itself an agricultural outgrowth of mining worthy of notice. Being intensive, the value of the produce is much greater than from an equal area of farmland.

Distribution of Improved Land

Growing out of the dependence of farming on mining in the range country is an unique distribution of farm land. We have noted that the farmer who settled here took lands near the towns; that the miners who turned to farming found it necessary to locate within three miles or so of the mine; that the lands the miner gardens and pastures must necessarily be near the mine; the result, a striking concentration of improved land near the towns and villages together with an equally striking lack of it elsewhere. One drives out of a mining town thru a few miles of farm

land only to come rather suddenly to the edge of the improved area and to plunge thru miles of cutover, second growth, or virgin forest. The developed state of the land near the mines, even the stony and hilly land, and the undeveloped state six to ten miles away from them is a strong comment on the influence of the mine in bringing about the improvement of the land. On the other hand, the fact that much of the land distant from the mines is not improved is an indication of the undesirable character of much of it from the standpoint of agricultural use; it is also an indication of the need for a definite forestry policy, one that would set these lands to producing crops of trees.

FIG. 5. The owner of this prosperous dairy farm need not seek winter work in the mines or the lumber camps.

THE FUTURE

What does the future hold in store? When the mines are no longer active will the farms fostered by them survive, or will the foundations and chimneys of abandoned farm houses remain with the refuse piles at the mines as monuments of a life that is past? On the basis of our present knowledge, we cannot answer this question for much can happen in the twenty-six years which very conservative estimates place as the probable future life of the mines. We can say, however, that if the mines were closed today, there is no doubt that some of the farm land would go out of use; there is also no doubt that many of the farms would continue to prosper. Moreover, it is the opinion of the writer that these more

prosperous farms reveal the probable line of development of the region if farming is to outlive mining. On these farms, dairying is the dominant activity, tho usually not the only one. Several creameries, as at Iron River, Ironwood, and elsewhere testify to the vigor of this type of farming, and a review of the geographic conditions of the area as set forth in the first part of this paper will show that these conditions are very similar to those found in the great dairy regions of the world. Another development full of meaning for the future is the increase of improved land thru the state land-clearing activities. By assisting in land clearing the state is helping to free the farmer from dependence on the mine. And finally, the awakening interest in growing trees on the non-agricultural land of the Upper Peninsula holds a promise of well being for the future farmer of the Iron and Copper Country. If he wishes winter work and a nearby market for his surplus foodstuffs, the lumbering camp may serve as an excellent substitute for the mine.

THE "OTHER GAPS" AND THE PORT OF NEW YORK

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In their treatment of the various Atlantic ports of the United States, writers of textbooks in geography have in the main ascribed the leading position held by the port of New York to the fact that it lies at the mouth of the Hudson-Mohawk gap or passage across the Appalachian Highlands. Along with this, the Erie Canal is mentioned as the principal factor that has given this port an advantage over all others on the same coast. Historically, and for the early part of our national life, the Hudson-Mohawk gap and the Erie Canal deserve first rank. It was not until this canal, made possible by this gap, had been completed, that New York entered upon the growth that has since made it the intellectual, educational and social, as well as commercial metropolis of the continent. But by 1860, and increasingly in the accelerated growth of New York since then, other factors came into action; factors that have since that time been more significant than the Hudson-Mohawk gap and the Erie Canal in making New York a metropolis.

DECREASING IMPORTANCE OF ERIE CANAL

For the last forty years the portion of the commerce with the West that the Erie Canal has borne to and from New York has been decreasing into insignificance. Before 1880, figures show that the canal traffic had been outrun by that on the group of railroads connecting into New York, or into its suburbs under separate government (Hoboken, Jersey City) from beyond the Appalachians. Since 1880, as geographers well know, the canal traffic has been steadily diminishing in absolute, as well as, relative volume. The one-hundred-fifty-million-dollar Barge Canal improvement has as yet done little to restore commercial importance to the Erie Canal. Far more significant, it would appear, is the fact that there are six lines of rails thru this gap, right into the port of New York: four tracks of the New York Central and two of the West Shore railroad. Indeed, the building of the West Shore railroad has brought more additional commerce to New York than the total amount that the Erie Canal carried in its best days. Tho the Hudson-Mohawk gap offers a far easier passage to and from New York than any other, nevertheless several other routes have played a significant part in giving this port its premier position.

THE ROUTE OF THE ERIE RAILROAD

First and perhaps most striking of these gaps is that of the upper Delaware and Susquehanna Rivers. Taking advantage of the low watershed between these and the ease with which the Highlands and Shawangunk ridge could be crossed, the historic Erie Railroad was built, over seventy years ago. We are only too likely, at least here in the commuting zone tributary to New York, to think of it as "the poor old Erie" and to forget that during at least three different periods it has been one of the larger carriers of freight to and from New York. Just before the Civil War, from 1880 to about 1893, and since 1905, this railroad has played an important part in the commerce of the port of New York. Indeed, not even the New York Central, favored by nature with an easy route, has hauled so many tons of freight per track per year as has the Erie in the last decade. With the probable absorption of this line into the new Nickel Plate railroad system, its importance in the commerce of the port of New York is likely to increase.

Too much emphasis cannot here be put upon the fact that it is not the gap of the upper Delaware alone that made the Erie Railroad route, but this and the valley of the Susquehanna, with its western affluent, the Chemung river. The combination of these two valleys provides a comparatively easy route for the entire distance across the Alleghany Plateau.

THE ROUTE OF THE LACKAWANNA RAILROAD

The middle Delaware river, cross-connections thru Lackawanna and Tunckhannock creeks, and the Susquehanna-Chemung valley, together provide a route which has been used by another important railroad, providing both freight and passenger service of a high degree of efficiency. The Lackawanna Railroad uses this third combination of gaps, passing across the ridges corresponding to the Highlands, where they are low, cutting thru the Kittatinny Mountain at Delaware Water Gap, and climbing over the Alleghany Plateau (here known as Pocono Mountain) until the cross-connecting gaps of the creeks are reached. The Susquehanna-Chemung valley is utilized by this route for nearly as great a distance as by its older rival. Of the various gaps leading to New York, this Lackawanna combination is by nature the least favorable for traffic; and it is in developing it that the most expensive and most skilful engineering on any route between New York and the Great Lakes has been applied. Without doubt, the fortunate combination of situations, that this route crosses the anthracite fields and that the railroad using it owns extensive mines in the better veins, has made possible the importance which this route has gained.

THE LEHIGH VALLEY ROUTE

The fourth gap tributary to New York is that formed by the middle Susquehanna river and the Lehigh river. Engineering skill was able comparatively early to provide a practicable route over the low and narrow strip of Alleghany Plateau between Wilkes-Barre on the Susquehanna and the head of the Lehigh river. As early as the '70's, the association of railroads which has since developed into the Lehigh Valley system was carrying thru freight to New York by this route; and of recent years a combination-service by the New York Central's lines in Pennsylvania, the Reading, and the Central Railroad of New Jersey, has utilized this as a

route, breaking thru the region west of the Susquehanna by the valley of the West Branch of that river. The older route passes along the Susquehanna above Wilkes-Barre, escaping into the basin of Lake Ontario by low passes among the Finger Lakes. The newer route uses the Susquehanna valley below Wilkes-Barre.

Now it may be objected that this route is quite as much tributary to Philadelphia as to New York; but the facts are quite against any such inference. At Easton and Bethlehem this route comes nearest to Philadelphia but rail routes thence to the city are not direct. But Easton is actually nearer to New York; there are no obstacles of any serious nature to be met beyond this point. One railroad has a short tunnel thru the low hills of western New Jersey and then follows the Raritan valley out onto the flat lands; the other winds easily among the hills a little further to the north.

The fact that the transportation lines reaching the port of New York thru these various gaps have their tidewater termini on the New Jersey side of the Hudson River has done much to obscure the relation of these gaps to the port of New York. With the West Shore ending at Weehawken, the Lackawanna at Hoboken, the Erie at Jersey City, and the Lehigh Valley and Central of New Jersey at Communipaw, this is readily understood. But it must be noted that all these places are as much parts of the metropolis and port of New York as are the districts called Harlem, the Bronx, Brooklyn, Long Island City, etc., which happen to be within the city limits as enlarged in 1898. It is significant that in freight service all these railroads maintain extensive car-lighterage systems, delivering loaded cars at their piers on the New York side of the river; and that all of them maintain comparatively modest passenger termini on the New Jersey shore. The ferry terminals in New York are their real stations. Since the Hudson Tubes were opened in 1907, three of these termini have actually been easier of access from both the financial district and the uptown business district of New York than most parts of New York City itself.

SUMMARY

1. It is not the Erie Canal, but the railroads following the same Hudson-Mohawk gap, that are today and have been for over half a century, important factors in making New York the metropolis of North America.

2. In addition to the Hudson-Mohawk gap, New York has at least three other routes of easy access to the Middle West:

a. The Upper Delaware-Upper Susquehanna combination of gaps, used by the Erie Railroad.

b. The Middle Delaware-Upper Susquehanna combination of gaps, used by the Lackawanna Railroad.

c. The Lehigh-Middle Susquehanna gap, used by the Lehigh Valley and Central of New Jersey Railroads—the former passing thru into the Ontario watershed, and the latter passing thru the valley of the West Branch of the Susquehanna.

There are, it will be noted, at least eight lines of rails (four double-tracked railroads) using these gaps, as against only six lines of rails thru the Mohawk valley. The carrying capacity, for freight and passengers alike, is therefore somewhat greater for the combination of these other gaps than for the Mohawk valley. No other port on the eastern coast of the United States has so many avenues of direct approach from the interior. As compared to any other continental coast line of equal length and commerce, the eastern coast of the United States is unique in having over 70 per cent of the commerce concentrated in the one port of New York. Not the advantages of the Hudson-Mohawk route alone, not the impetus given long ago to this port by the all but dead Erie Canal, not any particular quality of its population, not any wonderful superiority of its harbor, has given New York this dominance. The multiplicity of routes to the Middle West, especially to the Great Lakes, available from New York, is the factor which has caused that port to surpass so far its rivals, formerly equal or greater in size and importance.

WASHINGTON—THE NATION'S CAPITAL

A Topical Outline for Study

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The teacher in the elementary school, desiring to undertake a lesson in which geography and history are combined, can scarcely find a more fruitful topic than that of the city of Washington. For obvious reasons the nation's capital should be studied intensively at some time in the grades, but to treat the topic apart from United States history would be to fall short of true proportions.

Fortunately, good reference material is available in abundance. The teacher may assign as many special topics as she desires, allowing individual work for each member of her class. The lesson is an opportune one for the month of February, and may spare the teacher the added preparation and the break in her work incident to a formal "patriotic program." Pupils are invariably able to contribute interesting reference material and pictures.

I. Location
   1. Maps (Dist. of Columbia, Potomac River)
   2. Area. Shape. Boundaries. Population
   3. Potomac River. Rock Creek. Harpers Ferry. Fall Line
   4. Railroads. Union Railroad Station. Steamboats
   5. Effect of location on climate

II. History
   1. Former capitals of the United States
   2. Reasons for present location
   3. Methods used in securing present location
   4. Laying of cornerstone of capitol
   5. First inauguration of a president in Washington

III. Plan of City
   1. Originators
   2. General plan of city. Advantages
   3. Maps (City of Washington)

IV. Government
   1. By whom administered. Municipal building
   2. Public utilities—water, light, transportation
   3. Comparison with other cities
   4. Citizenship and franchise
   5. Schools
   6. City Post Office

V. Government Buildings
1. Capitol
2. Executive Mansion
3. Treasury
4. Bureau of Printing and Engraving
5. Department of Interior—Bureau of Education, Indian Affairs
6. State, War and Navy Building
7. Government Printing Office
8. Patent Office
9. Post Office
10. Pension Office
11. Library of Congress
12. Smithsonian and National Museums
13. Department of Agriculture. Weather Bureau
14. Bureau of Fisheries
15. Naval Observatory

VI. Other Buildings
1. Foreign Embassies and Legations
2. Pan-American Union
3. American Red Cross
4. Art Galleries—Corcoran, Freer

VII. Parks
1. The Mall
2. Zoological Gardens
3. National Botanical Garden
4. Potomac. Tidal Basin. Japanese Cherry Trees

VIII. Statues and Monuments
1. Washington
2. Lincoln
3. Lafayette
4. Andrew Jackson
5. Logan
6. Sherman
7. Grant
8. Peace
9. Lincoln Memorial
10. National Cathedral

IX. Virginia. Shore of the Potomac
1. Arlington Cemetery
Tomb of the Unknown Soldier of the World War
Memorial Amphitheatre
Fields of the Dead
Arlington House
2. Naval Radio Station
3. Fort Meyer

X. Mount Vernon
1. The Mansion
2. The Tomb of Washington

QUESTIONS AND COMPARISONS

1. What cities in the United States are about the same size as Washington, D.C.? (1920 census)
2. In what respects have Washington, Baltimore and Philadelphia similarities in location?
3. Compare Washington with Ottawa, Ontario, Canada.

PROBLEM

Since Washington is not an industrial city, how is it supplied with food?

DEBATE

Resolved that the National Capital should be moved westward to the geographical or population center of the United States.

REFERENCES

Encyclopedia Americana
Salisbury, Barrows and Tower, Elements of Geography, pp. 418; 516; 600
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GEOGRAPHICAL PUBLICATIONS

Douglas W. Johnson. **The New England-Acadian Shoreline.** 591 pp., 273 illustrations. John Wiley and Sons, N. Y. 1925. $8.50.

The title of this work will probably be found unattractive by the average teacher of geography and its listed price appallingly high. The human-geography teacher would be further discouraged on opening the book by encountering chapter heads all of which are exactly like this sample: "Initial Shorelines Bordering Weak-Rock Lowlands." But the shorthand terminology descriptive of landforms employed in the chapter heads belies the varied and lively interest of the contents. The reader will get from its pages a broad, interpretative description of all the Atlantic Coast of North America from Florida to Labrador and a completely detailed account of the section between the Hudson and the St. Lawrence. One makes the pleasurable discovery that the author has been able to fit the numerous, widely divergent, and seemingly quite unrelated phenomena of this long reach of coast line, together as parts of a whole, comprehended as such readily enough—that is, after Johnson supplies you with the clues.

To be specific: The teacher in New England (or elsewhere) who in the future ventures to comment on the geography of Cape Cod; Boston Bay, the Bay of Fundy, and the Banks that lie submerged under these waters, referred to broadly as the Gulf of Maine; without having studied the sketch map, Fig. 144 of this book, and the text matter relating to it, may be considered failing of his responsibilities. One sentence, page 321, tells the story concisely: "The Gulf of Maine region is, in fact, found to be a duplication of the New Jersey coastal plain and oldland topography almost wholly concealed beneath the waters of the sea."

Everyone may not accept Johnson's interpretations. Other concepts and the evidence for such alternative interpretations are fully and impartially presented. The nature of fiords, the varying depth of the edge of the continental shelf, the Hudson gorge, the scenery of Mount Desert Island, the geography of salt marshes, are others of many topics discussed. In this book the author has escaped the labored presentation of his "Shore Processes and Shoreline Development," 1917, a volume introductory to the one here reviewed. Now, finally, he is at the business he had in mind at the start, and hence proceeds easily and convincingly.

There is an educational aspect to the book that also merits attention. As a social science geography imposes no necessity on the pupil to acquire a technical vocabulary and to use it exactly. Hence it affords no preparation for a later study of economics, of biology, of philosophy, of psychology, the subject matter of which is technically phrased. Why be so shy in geography of understanding *cuestas, rias, "peneplanes,"* and *tumbolos?*

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Harlan H. Barrows, and Edith Putnam Parker. **United States and Canada.** 288 pages. 324 illustrations. Silver, Burdett and Company, N. Y. 1925.

This book is the second book of a series for the elementary schools. In the first book, "Journeys to Distant Lands," the content deals with distant regions. The second book is a regional study of the United States and Canada. The book is divided as follows: (1) Glimpses of the land in which you live, (2) Western United States, (3) Between the Rocky Mountains and the Mississippi, (3) Southeastern United States, (4) Northeastern United States, (5) United States summary, (6) Scattered American lands, and (7) Canada.

The United States and Canada are considered from the standpoint of work regions which do not have sharp boundary lines. An attempt is made to have the child discover where corn is very important, but the correct impression is given that there are no sharp boundary lines delimiting the corn belt. The maps, in general, contain only the place names that have a bearing on the topics developed. Emphasis has been placed on the more important topics; minor topics have been lightly treated or eliminated. The authors have thus been able to include the numerous details which help to make a region real to children. The emphasis on urban geography, in view of the fact that over 50 per cent of the people of the United States live in cities, is timely.

The authors have retained the numerous effective and commendable devices that were used in Book One. The curiosity of the pupil is aroused. He is stimulated to think. He comes to understand that man's relations to his physical environment can be explained. There are frequent exercises on a play level, altho these exercises are not as numerous as in the first book. Provision is made for much stimulating expression work thru a notebook that the pupil is to keep. The ideas expressed thru pictures, maps, and language symbols are closely interwoven so that one unified train of thought will be developed. The pupil must draw on his knowledge of preceding lessons and also on his knowledge of local geography in the interpretation of topics. An effort has been made to grade the principles of geography in accordance with the unfolding abilities of the child.

The book is appropriately more difficult to master than the "Journeys to Distant Lands." While it is closely related to the first book, the two books should not be regarded as inseparable. The "United States and Canada" will be found a useful second book in schools where a first book is preferred that "deals with a study of the local environment and with journeys, radiating from the home area, into distant regions." In the two books that have been published, the pronoun "you" is somewhat too evident. In many places the pronoun "we" could have been used more effectively.

The second book, in general, meets the expectations of those who know the careful, painstaking work that the authors are doing in the field of geography.

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J. F. Unstead. **The British Empire and Its Problems.** The "Citizen of the World Geographies," Book Four. 278 pp., 13 maps and grafs. Sedgwick and Jackson, London. 1924.

The previous books in this series of geography textbooks are: I. The British Isles of Today; II. Europe of Today; III. World Geography and World Problems. The British Empire and Its Problems is the final book of the series. The four books are textbooks for a course of four years in the schools of England. The author holds that "a citizen should have been so educated as to possess a broad knowledge of the various peoples of the world and their problems, together with an attitude of mind characterized both by good will to the peoples and a desire to form a just solution of the problems with which his state may be concerned. Hence a guiding principle in the writing of these books has been to help the readers to a *sympathetic understanding* of the lives of the peoples of our own and other countries." The volume is introduced by a brief study of the British Isles, followed by studies of the self-governing dominions, the empire of India, the colonies, protectorates, and dependencies. The closing chapter deals with "some imperial problems."

While this book and its three companion volumes are textbooks for the British schools, they form an admirable set of supplementary readers for pupils in the elementary schools of the United States. It is exceedingly helpful in the effort to prepare pupils to take their places as "citizens of the world" to put in their hands the very books that the boys and girls of other lands use for their textbooks in geography and other subjects. The "Citizen of the World Geographies" is a good series to add to any school library. The price of the books is about the same as for the usual geography supplementary readers of American publishers.

Clark University DOUGLAS C. RIDGLEY

Leonard Packard and Charles P. Sinnott. **Nations as Neighbors.** 579 pp., 6 color maps, 55 black and white maps, and 278 photos. The Macmillan Co., N. Y. 1925.

Junior high schools have been rapidly gaining ground in city school systems. Many administrators believe that the geographies written for the upper grade of elementary schools are not suitable. The authors have attempted to fill a need for a suitable geography textbook in this field.

The book is divided into five parts as follows: (1) Introduction, (2) The United States, (3) Europe and European Colonies, (4) The Orient, and (5) Latin America.

The authors stress (1) the United States as the home country of the child, (2) the dependence of the people of each region studied on the physical conditions and resources of their environment, (3) the dependence of the people of one region upon the people of other regions, (4) the historic backgrounds as a basis for understanding present geographic adjustments, and (5) the essential geographic unity of the world as a whole.

The treatment of countries by continental divisions is regarded as incidental. The countries or regions which have been most important in bringing the world to its present level of achievement are emphasized. The United States is treated with much greater detail than other countries. European colonies are studied in connection with the countries to which they belong. China and Japan are given special emphasis. Latin America, including all the region south of the United States is treated as a major unit.

The print is clear and large. Numerous pictures to reenforce the language symbols have been provided. The black and white maps and the grafs are exceedingly helpful.

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Each chapter has a carefully selected list of "questions and problems," "projects and exercises," and "references." Valuable statistical tables are included in the Appendix.

The physical background for human activities should have been given more emphasis, not in separate chapters, but in relation to the geographic activities discussed.

The content for junior high schools is still in a condition of flux. The authors, however, have demonstrated that geography has a distinct contribution to make in the construction of a junior high school curriculum.

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George Philip and T. Swinborne Sheldrake (Editors). **The Chambers of Commerce Atlas.** 10½ x 15½ inches, 45 double page maps, 24 single page maps, 93 pages of grafs, diagrams, and text. George Philip and Son, London. G. P. Putnam's Sons, N. Y., American Agents. 1925. £2 12s 6d net.

The Chambers of Commerce Atlas is a "general survey of the economic activities of mankind." Its purpose is to present in definite, accurate form "fresh information concerning the conditions affecting industry" thruout the world and summarize present knowledge of the "distribution of commodities available for commerce." The work was done in conjunction with *The Times Trade and Engineering Supplement* and the Association of British Chambers of Commerce. All the maps, grafs and diagrams are in color. They are designed to present statistical economic data in a form that is easily understood and to make a direct appeal to the eye. The Atlas undoubtedly brings together in one volume a greater body of usable information than anything heretofore published. It has no counterpart in America and will be found invaluable for high school, normal school, college, and university.

The great body of material is organized under five major headings: (1) Introductory Maps and Diagrams; (2) Communication and Transport; (3) The Commodities of Commerce; (4) Commercial Development of the Principal Countries of the World; (5) Commercial Compendium. The major groups are subdivided into minor ones, each of which is treated fully by sets of maps, diagrams, and text. The treatment of a single commodity, as wheat, will illustrate the type of information supplied: seven maps, World, Europe, Egypt, Australia, United States, Argentina, India; nine diagrams, growth of world production, consumption per capita, total consumption by countries, prices of wheat in United Kingdom, production by countries, yield per acre by countries, sources of British supply, exports and imports by countries; and one page of text discussion.

When one considers the great variety of material on each map which portrays the commercial development of individual countries it is surprising that these maps are legible at all. Among other things the map of France, for example, shows industrial areas, agricultural and stock raising districts, forests, unproductive regions, fisheries, railroads, navigable rivers, canals, steamship routes, mines, location of manufactures of principal commodities, coaling stations, wireless stations, oiling stations, docks and wharves, and water power. The maps are supplemented by diagrams and statistics of commerce by commodities and countries.

The Atlas is a splendid contribution to the field of economic geography. Its defects are small indeed compared with its excellent qualities.

G. J. M.